10216

Diagram No. 8802-3

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey ..... Hydrographic

Field No. RA-20-1-86

Registery No. H-10216

LOCALITY

State ..... Alaska

General Locality ..... Bristol Bay

Sublocality ..... Seven Miles Southwest of Round Island

19 86

CHIEF OF PARTY
CAPT C.W. Fisher

LIBRARY & ARCHIVES

DATE ..... August 20, 1987

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

10216

ACPG & Aran 5
CHTS
16315
16011
16006
} To Sign off Sees Record of Application to Charts.

Ref Bp/30285-86 (Advance Info).

NOAA FORM 77-28 (11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-10216

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

RA 20-1-86

State Alaska

General locality Bristol Bay

Locality Seven Miles Southwest of Round Island

Scale 1:20,000 Date of survey June 22 - July 17, 1986

Instructions dated April 16, 1986 Project No. OPR-R184-RA-86

Vessel RAINIER S221 (2120), Launch RA-4 (2124), RA-5 (2125)

Chief of party CAPT C. W. Fisher, NOAA

Surveyed by LT White, LT(jg) Porta, LT(jg) LaReau, ENS Brown, ENS Damm, ENS Poston ENS O'Mara

Soundings taken by echo sounder, ~~hand lead, pole~~ DSF 6000N

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by T. Jones, M. Sanders

~~Protracted by~~ Automated plot by PMC Xynetics Plotter

Evaluation by I. Almacen

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths of fathoms

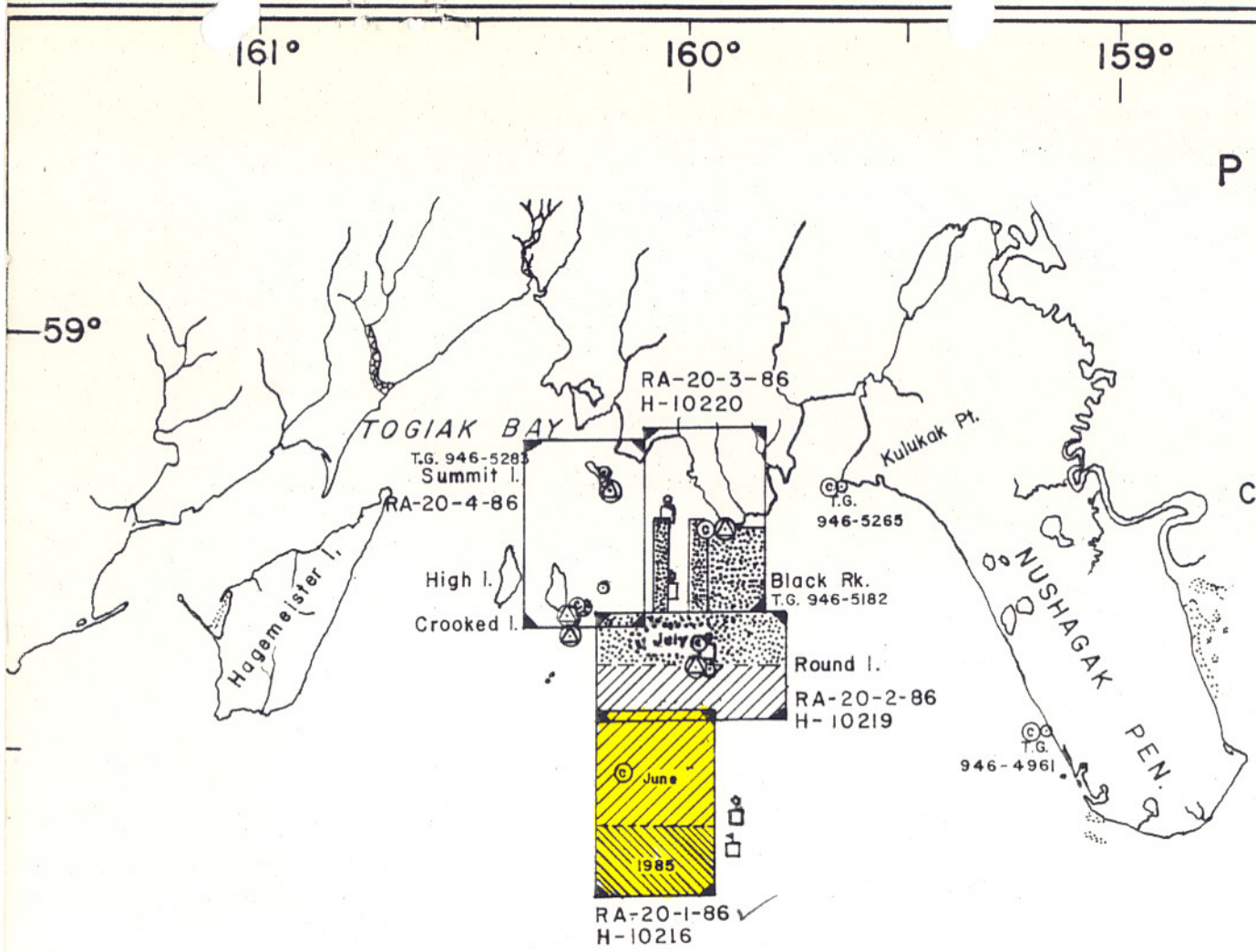
REMARKS: Marginal notes in black are by the evaluator. Separates are filed with the hydrographic data.

JC 2-5-97 AWOIS and SURF - RWD 9/87

K. WW 9/30/93

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174



PROGRESS SKETCH

OPR-R184-RA-86

HYDROGRAPHIC SURVEY

TOGIAK BAY, ALASKA

JUNE 5 – JULY 31

NOAA SHIP RAINIER

CARL W. FISHER, CAPT., NOAA

COMMANDING

FROM CHART 16011

JUNE	JULY	AUG.	
380.9	102.75		SQ.N.M. Sounding
773.0	906		L.N.M. Misc. Distance
1370.7	1328.8		L.N.M. Sounding
99	206		Bottom Samples (Grab)
6	1		Control Station (Electronic)
1	5		Temp., Depth, Sound Velocity
1	—		Nansen Cast
3	2		Tide Gages ⊙
2	—		Stations Located by Traverse
7	—		Water Samples Analyzed
—	0.7		SQ.N.M. Side Scan Sonar
—	21.5		L.N.M. Side Scan Sonar
—	—		SQ.N.M. Wire Drag
—	—		L.N.M. Wire Drag
16	12		Water Transparency Sta. (K-Meter)
4	3		Current Stations Occupied ⓒ

A. PROJECT

A basic hydrographic survey was completed as specified by Project Instructions OPR-R184-RA-86, dated April 16, 1986 and Change Number 1, dated May 23, 1986. This survey is designated sheet X from the original sheet layout for the Bristol Bay survey project, dated January 25, 1985. The survey was assigned the Registry Number H-10216 (Field Number RA-20-1-86).

B. AREA SURVEYED

The survey is located in northeast Bristol Bay, Alaska; an area centered seven miles southwest of Round Island. Nushagak Peninsula lies thirty miles east of the survey and the Alaska mainland, eighteen miles north. The area is a major shipping route for vessels approaching the fishing regions of Nunavachek and Kulukak Bays. Shoal waters which have not been adequately surveyed, border the sheet to the west. The survey is bounded by the following limits:

North	-	58° 32′ 00" N
South	-	58° 25′ 00" N
East	-	159° 56′ 00" W
West	-	160° 11′ 30" W

Data aquisition was conducted from June 20, 1986 to July 20, 1986 (DN 171 - DN 201).

C. SOUNDING VESSELS

Vessels used in this survey were:

Vessel	EDP #
RAINIER	2120
RA-4	2124
RA-5	2125

RA-5 was used only to collect bottom samples.

No changes to the standard sounding configurations were necessary.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Throughout the survey, RAINIER (vesno 2120) used the Raytheon DSF-6000N Digital Survey Fathometer. The ship's starboard midships transducer was used exclusively for acquiring sounding data. The transducer depth was measured with a pneumatic depth gage (S/N 8504192N) on 6 JULY 86 while the ship was in port at Dutch Harbor. The measured depth of 2.2 fm checks well with historical data.

RA-4 (vesno 2124) was used to acquire sounding data on two days. RA-5 (vesno 2125) collected all bottom samples on this survey. Both vessels were equipped with DSF-6000N echo sounders.

Vessel	DSF-6000N Serial Number	Day Numbers
2124	A103N	194,198
2125	A117N	173-179

An occasional problem with the shipboard echo sounder was the temporary fading out or complete disappearance of both the analog trace and the entire set of scale markings. Consequently, the instrument had to be replaced and repaired twice during the six day ship surveying period. The problem was found to lie with the paper grounding contact not making a proper connection with the electro-sensitive paper. The problem occurred on DN 174 (position numbers 1324-1366) and again on DN 177 (position numbers 3101-3408). In neither instance was data quality severely impaired. The following list summarizes the echo sounders used by RAINIER (vesno 2120) during the survey.

Day Number	Position Numbers	DSF-6000N Serial Number
174	1200-1366	A123N
174	1367-1715	A119N
175	1716-2417	A119N
176	2418-3100	A119N
177	3101-3408	A119N
178	3409-3456	A103N
179	3457-3485	A103N

The ship and both survey launches operated the DSF-6000N echo sounder in the HIGH + LOW (HIGH DIGITIZED) function setting, using manual gain controls to obtain the best analog trace. The transducer installation locations on the three vessels are such that all sounding corrections apply to both echo sounder frequencies on each vessel. Adjustments to the instrument initial are not required for the DSF-6000N.

The scanning technique used in comparing the analog trace with the digital record was chosen to eliminate fluctuations greater than 0.2 fathom resulting from sea action, while at the same time preserving the trend of the slope in this gentle sloping area.

Velocity of sound through water and the associated corrections to echo soundings were determined by velocity probe casts using a Plessy/Grundy Sound Velocity Sensor (serial # 3444) coupled to a Hewlett-Packard 5315A Universal Frequency Counter (serial # 1946A03637). Three velocity casts were made during this survey. The cumulative layer corrections from cast numbers 1 and 2 were averaged and the resulting velocity correction of 0.0 fm applied to all survey depths obtained between days 173 and 179. Likewise, velocity corrections from cast numbers 2 and 3 were averaged and applied to survey depths obtained between DNs 194 and 198. The Plessy/Grundy Velocity Sensor was last calibrated in March, 1985 by The Northwest Regional Calibration Center, Bellevue, Washington.

SUMMARY OF VELOCITY CORRECTIONS

Applicable DNs	Vesno	Correction
174-179	2120	0.0 fm at all survey depths
194&198	2124	0.0 fm to 6.5 fm depth +0.1 fm below 6.5 fm

In addition to the electronic sound velocity measurements, a Nansen Cast was performed on Day 172, with resulting sound velocities in agreement with the electronic cast of the same day. The Nansen cast data were used only as a check to the velocity probe measurements, and were not used to calculate corrections to echo soundings for this survey. The following table summarizes the velocity cast stations occupied during the survey.

VELOCITY CAST STATIONS

Cast Number	Day	Position
Nansen #1	172	58° 23.2′ N 159° 53.5′ W
Plessey #1	172	58° 24.0′ N 159° 52.8′ W
Plessey #2	183	58° 24.5′ N 159° 53.1′ W
Plessey #3	195	58° 37.4′ N 159° 58.1′ W

A shallow water settlement and squat test was performed on the ship on 21 JULY 86 (DN 202) in the vicinity of Kulukak Point over an area of particularly flat bottom, approximately 45 feet deep. The ship navigated along a constant Loran C rate programmed into the bridge RAYNAV computer. As this trackline intersected each of five preselected consecutive Loran C rate readings, approximately 500 meters apart, an observation of the raw sounding depth was recorded. The speeds tested were dead in the water (DIW); 100 RPM, 10 ft pitch; 160 RPM, 10 ft pitch; 180 RPM, 10 ft pitch; and 200 RPM, 10 ft pitch. Simultaneous tide gage readings were recorded at the Kulukak tide gage, and all soundings recorded throughout the settlement and squat test were normalized to the DIW tide gage reading. The echograms were scanned for sea action of 0.5 ft.

A deep water settlement and squat test was performed on the ship on 8 AUGUST 86 east of Black Rock in a depth of approximately 100 feet. The same procedure was used as for the shallow water trial, and the results of both tests were averaged together to produce a final corrector of 0.0 fm for 100 RPM and +0.1 fm for RPMs greater than 100.

Settlement and squat trials were performed on launch RA-4 (vesno 2124) on 8 AUG 86 (DN 220) in the vicinity of Summit Island in a depth of approximately 5 fathoms. Seas were flat and wind was calm as the launch made successive runs toward and away from an observer positioned on a rock NW of Summit Island. With an elevation rod held vertical on deck directly above the transducer, observations were made with a Zeiss Ni2 leveling instrument (S/N 87102) as the launch was DIW, then at speeds of 700, 1000, 1200, 1500, 1800, 2000, 2200, and 2400 RPMs. Five readings were recorded and averaged at each RPM tested. A temporary tide staff, installed at the location of the observer, was read concurrently with the level observations, and all elevations were normalized to a common tide height. A correction of -0.1 fm was found for engine RPMs greater than 2000.

Soundings on the final field sheet are not corrected for settlement and squat. A TC/TI tape has been cut and submitted with this survey. Records of all settlement and squat data are included in Appendix IV.

Tide correctors for this survey were provided by N/OMA12, based on 1985 data from Black Rock, Walrus Island, Bristol Bay, Alaska (946-5182). Soundings were rough plotted using the Project Instructions' predicted time and height correctors applied to Black Rock. These predicted tides proved to be inadequate as evidenced by inconsistencies observed when comparing mainscheme soundings with split and crossline soundings. After analyzing tide data from the Black Rock and Nushagak Peninsula gages, a supplemental gage was installed at Round Island for 8 days and one tide cycle was measured using the ship's echo sounder while anchored within the limits of Sheet X in order to formulate a more suitable corrector for the offshore area. The method for obtaining the new zoning is discussed in detail in the Field Tide Note. Soundings on the final field sheet were plotted using the following correctors applied to Black Rock predictions.

TIME CORRECTION		HEIGHT RATIO
High Water	Low Water	
-5 min	-5 min	.22

E. HYDROGRAPHIC SHEETS

Two 1:20,000-scale plotter sheets designated RA-20-1S-86 and RA-20-1N-86 were used to plot survey data. These sheets were prepared aboard the RAINIER using the PDP-8/e Hydroplot system on a Houston Instrument Complot DP-3 roll plotter. This computer system draws a modified transverse mercator projection. An expansion sheet was also used to plot a development. The parameters which define these sheets can be found in Appendix I.

The final field sheet and accompanying field records will be forwarded to the Pacific Marine Center for verification.

F. CONTROL STATIONS

During this survey, four monumented and described control stations were recovered. Three of these stations were used as electronic control signals. CROOKED 1948 was used only as an initial during Mini-Ranger system checks and while locating additional stations.

CONTROL STATIONS

Station	Signal No.	Order	Quad No.	Station #
CROOKED 1948	200	second	581601	1002
CROOKED 1948 AZ MK	202	second	581601	1003
RIGHT HAND 1948	106	first	581594	1008
ROUND 1948	104	first	581594	1010

In addition, station BOO-BOO 1985 (signal no. 105) was used as an electronic control signal. This station was located to Third-order Class I standards in 1985. A minor adjustment was made to its field position during the survey. An explanation of this adjustment can be found in the Horizontal Control Report, OPR-R184-RA-86.

see EVAL RPT sec. 2

Two new stations were established: FOG 1986 and CAL POLE. Only FOG was conventionally monumented. It was used as a theodolite station during Mini-Ranger system checks. The station was located with a traverse from BOO-BOO to Third-order Class I standards. Two reference marks, RM 1 FOG 1986 and RM 2 FOG 1986, were set with the station. Station CAL POLE was also located to Third-order Class I standards by a traverse from FOG. The station is marked with an eye bolt in a large rock at the water's edge. CAL POLE was used once during the survey as a static system's check station.

Computations and abstracts for FOG and CAL POLE can be found in the Horizontal Control Report, OPR-R184-RA-86.

All positions in this survey are based on the 1927 North American Datum.

G. HYDROGRAPHIC POSITION CONTROL

Soundings were located using range-range geometry with range data being acquired by Motorola's Mini-Ranger III electronic positioning system. Additionally, bottom samples were located using Loran-C position control. A geographic position was converted from Loran-C rates to Mini-Ranger rates, and the bottom samples were plotted using these rates.

Mini-Ranger range hole problems were encountered throughout the survey. Generally, this was limited to the left station: CROOKED AZ MK or BOO-BOO. Characteristically, the vessel(ship) would be on line receiving strong signals and steady signal strengths. Then, for no apparent reason, the console would stop receiving one of the stations - usually the more distant station. The vessel maintained course and speed and would begin receiving both stations again after a brief period. Upon coming out of the range hole, the ship was generally within twenty meters of the line. Due to the frequency of these range holes and the confidence in maintaining the line while in the hole, a distance of four centimeters was established as the maximum distance allowable for time and course fill-ins. This is equivalent to nine soundings. Gaps greater than four centimeters were rerun.

The range hole problem was solved by one of three methods. The line was rerun with the same control at a different stage of tide; the line was rerun with different control; or the line was run with the launch.

Only one Mini-Ranger console/RT pair was used during this survey: console 715, RT 911615. The following table lists the days which the pair was in each vessel.

DN	EDP #	Vessel Name
171-179	2120	RAINIER
194,198	2124	RA-4

Along with this console/RT pair, five shore transponders were used:

Code	Serial Number
0	01789
1	C1883
B	B1412
E	911721
F	911711

See Appendix V for location of transponders and days used.

The console/RT pair (s/n 715,911615) was calibrated over a baseline on Lake Union in Seattle, Washington on May 7, 1986. From this calibration, correctors and signal strength cutoffs were developed. These correctors were confirmed throughout the survey with critical system checks. All plotting was done using these initial baseline correctors. See Appendix V for a list of correctors. A final baseline calibration will be conducted upon return to Seattle, at which time final correctors will be developed. If these correctors differ by less than five meters, the initial baseline correctors will be maintained for final plotting.

Calibration and system checks were conducted in accordance with PMC OPORDER, Appendicies M and S. Theodolite intersection was used as the primary critical system check method. In addition, a static critical system check was made at station CAL POLE on day 201 with vesno 2124. Critical checks were made on the following days:

171,173,178,183,190,197,201

Noncritical system checks were accomplished using several methods. On day 175 with vesno 2120,a noncritical system check was conducted by developing a geographic position from the ranges of two stations and converting that position to ranges of two other stations. These computed ranges were then compared with the observed ranges to develop differences. Ten meters on a 1:20,000-scale survey was established as the rejection limit. The differences observed from both the noncritical and critical system checks were well within the ten meter limit. An additional noncritical system check was made on codes 0 and 1. Both transponders were set up on station ROUND. Simultaneous observations of these two ranges were made throughout the survey to ensure their agreement.

An abstract of correctors derived from critical system checks can be found in Appendix V. Additional data can be found in the Electronic Control Report, OPR-R184-RA-86.

While range holes presented the greatest problems in electronic control, low signal strengths were also noted in several areas. These were most likely due to the distance at which ranges were being carried(up to 33 kilometers). Signal strengths near cutoff were primarily limited to the southern portion of the sheet.

Four positions, 4101 - 4103, were recorded with an angle of intersection of twenty-nine degrees. This occured on DN 194 between stations BOO-BOO and ROUND. These stations were the only ones available for use in this location.

The ANDIST on vessel 2120 was 000 degrees, 6.6 meters. The starboard midship transducer was used to acquire soundings. The RT unit was located at the top (elev. 77 ft.) of the forward mast. On vessel 2124, the RT is located over the transducer with an ANDIST of 0,0.

H. SHORELINE

No shoreline exists on this survey.

I. CROSSLINES

A total of 41.2 nautical miles of crosslines were run. This is equivalent to 6.6 percent of the total mainscheme hydrography. In all cases, crossline soundings agreed with mainscheme soundings within eight tenths of a fathom. The following table lists the agreements of soundings.

CROSSLINE AGREEMENT

soundings within .1 fathom :	68%
soundings within .2 fathom :	87%
soundings within .3 fathom :	98%

The disagreements which exist are believed to be due to differences between predicted and real tides.

J. JUNCTIONS

This survey junctions with three contemporary surveys.

JUNCTION SURVEYS

Registry No.	Scale	Year	Location
H-10184	1:40,000	1985	south junction
H-10188	1:20,000	1985	east junction
H-10219	1:20,000	1986	north junction

The survey, H-10219, was conducted concurrently with this survey. Data acquisition was continuous from H-10216 through H-10219. No irregularities were found with soundings or depth contours at the junction points. The following table lists the agreement found between soundings at the junctions.

JUNCTION AGREEMENTS

Survey	within .1 fm	within .2 fm	within .3 fm
H-10184	59%	75%	97%
H-10188	56%	88%	99%

Vessel RA-4 was used to fill in gaps left by the RAINIER. Upon taking into account the vessels' different settlement and squat values, no significant disagreements were found. In all cases these junctions agreed within eight tenths of a fathom.

VESSEL JUNCTION AGREEMENT

within .2 fm : 60%
within .5 fm : 95%

K. COMPARISON WITH PRIOR SURVEYS

This survey was compared with one prior survey.

Registry No. : H-7718
Scale : 1:100,000
Year : 1948

A sample of prior survey soundings was used for the comparison. Agreements fall within the following limits:

soundings within .3 fm : 53%
soundings within .7 fm : 89%
soundings within 1 fm : 98%

No significant disagreements were found.

The 1948 survey was a reconnaissance survey; therefore, soundings are sparse and depth curves were not adequately depicted. With the present survey, a larger concentration of soundings were aquired which enable better definition of the bottom.

The bottom throughout the survey area was generally flat and regular. Slopes in the northern part of the survey area were on the order of one fathom in four miles, while in the southern portion, slopes were steeper; one fathom in one-quarter mile.

Standard depth curves of five and ten fathoms are depicted on the final field sheet. Supplemental curves in one fathom intervals are drawn at depths less than ten fathoms. At depths greater then ten fathoms, the curves are drawn at two fathom intervals. The six fathom supplemental curve was drawn in green ink. All other supplemental curves vere drawn in brown ink on the final field sheet. ✓

The pattern of depth curves throughout most of the survey area is more irregular than should occur where the bottom is so flat. These irregularities can be explained by two reasons. Small changes in the depth determined when scanning records with sea action can cause horizontal displacement of depth curves. Also, small errors in predicted tides resulted in a sawtooth pattern where the ship ran adjacent mainscheme lines at different stages of the tide. Many of the irregularities no longer exist after application of final correctors.

L. COMPARISON WITH THE CHART

This survey was compared to the following charts:

Chart Number	Scale	Edition	Date
16011	1:1,023,000	30th	4/2/83
16315	1:100,000	1st	3/9/85

All charted soundings within the limits of the survey were used for this comparison. Agreement was found to be within seven tenths of a fathom in all but two cases. The following table compares these discrepancies. ✓

	Chart Number	Charted Depth	Survey Depth	Position
1.	16011	12.0	7.4	58° 25 52" N 160° 05 30" W
	16315	12.0	7.5	58° 25 44" N 160° 05 32" W
2.	16011	8.0	13.5	58° 27 58" N 159° 58 10" W
	16315	8.0	13.7	58° 28 10" N 159° 58 10" W

In the first disagreement, the origin of the 12.0 fathom depth is unknown. The 1948 survey suggests an eight fathom curve is located in this area, while the present survey shows a well developed 7.5 fathom curve. The bottom is regular with a gentle slope in this location. Due to the extensive coverage of soundings obtained with this survey and the small scale of both charts, it is recommended that the survey depths supercede the charted depths in this area. ✓ concur.

Likewise, in the second disagreement, the origin of the 8.0 fm depth is unknown. The 1948 survey suggests a 13 fathom contour in this region, while the present survey shows depths of 13.~~5~~[2] fathoms. Again, the bottom is regular and gently sloping. It is recommended that the surveyed depths supercede the charted depths in this area.

In the southwest corner of the survey area, the bottom becomes irregular, rugged and shoal. For these reasons the 200 meter mainscheme lines were split to 100 meter spacing. The northern limit of these splits is latitude 58° 26' 18" N while the eastern limit is the 6 fathom contour. Depths in this area range from 4.6 fms to 6.4 fms. There was no evidence of significant features in this area.

One other area on the sheet was developed, based on a 5.~~0~~[9] fm peak found nineteen seconds out of position 2036. Fifty meter spacing was used to delineate this feature. No shoaler soundings were found in this area. The least depth of ~~5.0~~ 6.0 fms is located at:

58° 26' ~~16~~ 15.83" N
160° 06' ~~09~~ 08.89" W

Adjacent soundings in this region range from 6.4 to 7.9 fathoms. An expansion plot of this development was made. The parameters for the plot can be found in Appendix I.

A Dangers to Navigation report was submitted to NOAA-PMC and to the United States Coast Guard for immediate chart publication in the Local Notice to Mariners. This report was in reference to shoal soundings found beyond the western limit of the survey. Before running survey lines with the ship, a reconnaissance survey was run by vesno 2124 on the western edge of the sheet and west of the sheet limit. This area was developed to enable the ship to make safe turns once breaking a sounding line. A least depth of 2.0 fathoms was found at position:

58° 27' 42" N
160° 12' 07" W

A copy of the Dangers to Navigation Report and correspondence with the Coast Guard and Pacific Marine Center can be found in Appendix XI. Field data were directly transmitted to N/CG222 by the hydrographer.

There were no AWOIS items within the limits of this survey.

M. ADEQUACY OF SURVEY

This survey is the first basic survey to be conducted over this area. The prior survey was reconnaissance only. This survey is complete and adequate to supercede the prior survey.

concur.

N. AIDS TO NAVIGATION

There are no aids to navigation in the survey area. ✓

O. STATISTICS

EDP #	Number of Positions	Nautical miles of Sounding lines
2120	2233	702.3
2124	138	44.3
2125	81	n/a
total	2452	746.6

Square Miles of Hydrography	:	57.1
Bottom Samples	:	81
Tide Stations	:	5
Current Stations	:	1
Velocity casts	:	3
Days of Production	:	15

✓

P. MISCELLANEOUS

An eleven hour current observation was made 8.7 miles southwest of Round Island at the following location:

58° 28' 30" N
160° 08' 18" W

The current observed was rotary in nature with a maximum velocity on the order of one knot. Additional observations were made on adjacent survey sheets and can be found in the Current Report which will be forwarded to N/CG243. ✓

Water clarity observations were made in the region of this survey and can be found in the Water Clarity Report which will be forwarded to N/GC241.

Bottom samples have been submitted to the Smithsonian Institute.

Fixes were simultaneously acquired with Loran-C and Mini-Ranger control throughout most of the survey. Due to computer problems, it was not possible to acquire Loran-C rates over the entire survey area. The Loran-C chain available in the area is the 9990 chain, using the Y and Z secondary station type Lines of Position. Loran-C control was compared to Mini-Ranger control by converting Mini-Ranger rates to a geographic position and plotting the Loran-C coordinates. On the average, these comparisons show the Loran-C position .07 NM southwest of the Mini-Ranger position. No Loran-C data used for position checks with Mini-Ranger were transmitted with this report.

Q. RECOMMENDATIONS

Field work on this survey is complete and no additional work is required.

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished with a PDP 8/e Hydroplot computer system. The following is a list of programs used to carry out the acquisition and processing.

Number	Description	Version
RK 112	HYPERBOLIC, R/R HYDROPLOT	3/01/86
RK 201	GRID, SIGNAL, AND LATTICE PLOT	4/18/75
RK 211	RANGE-RANGE NON-REAL TIME PLOT	2/13/84
RK 212	VISUAL STATION TABLE LOAD	4/01/74
RK 221	COMB R/R & HYPER PLOT NON-RT	3/26/86
RK 300	UTILITY COMPUTATIONS	10/21/80
RK 330	REFORMAT AND DATA CHECK	5/04/76
PM 360	ELECTRONIC CORRECTOR ABSTRACT	2/02/76
RK 407	GEODETIC INVERSE/DIRECT COMPUTATUION	9/25/78
RK 409	GEODETIC UTILITY PACKAGE	9/20/78
AM 500	PREDICTED TIDE GENERATOR	11/10/72
RK 530	LAYER CORRECTIONS FOR VELOCITY	5/10/76
RK 561	H/R GEODETIC CALIBRATION	12/01/82
RK 562	THEODOLITE CALIBRATION	9/05/84
AM 602	ELINORE-LINE ORIENTED EDITOR	12/08/82
AM 606	TAPE DUPLICATOR	8/22/74
AM 607	SELF-STARTING BINARY LOADER	8/10/80

RK 610	BINARY TAPE DUPLICATOR	1/31/85
RK 900	PLOT TEST TAPE GENERATOR FOR AM 902	5/07/76
RK 901	CORE CHECK	3/01/72
AM 902	REAL TIME CHECKOUT	11/10/72
DA 903	DIAGNOSTIC--INSTRUCTION TIMER	2/27/76
RK 905	HYDROPLOT CONTROLLER CHECKOUT	3/18/81
RK 935	HYDROPLOT HARDWARE TEST	3/15/82
RK 950	HARDWARE TEST (DOCUMENTATION ONLY)	6/02/75

The program RK 221 was received onboard the RAINIER after data acquisition and processing of this sheet had begun. While RK 112 corrector tapes are compatable with RK 221, a problem was found with the new program. Whenever a change in control occurs on the corrector tape, the last fix before the control change is not plotted correctly. Where this occurred on the final field sheet, soundings were inked in. The corrector tapes which accompany this data have been formatted to RK 221 standards.

The program RK 221 has an option to allow soundings to be plotted by time. This option was used where soundings overlapped due to junctions.

S. REFERRAL TO REPORTS

The following reports contain information relevant to this survey:

Corrections to Echo Soundings Report, OPR-R184-RA-86
Horizontal Control Report, OPR-R184-RA-86
Electronic Control Report, OPR-R184-RA-86
Coast Pilot Report, OPR-R184-RA-86
Current Report, OPR-R184-RA-86
Water Clarity Report, OPR-R184-RA-86

Respectfully submitted,

John C Damm

John C. Damm, ENS, NOAA

VERIFIED SIGNAL LIST

OPR-R184-RA-86

VERIFIED BY: KF DATE: 9/16/86 CHECKED BY: MJM

SURVEY H-10216 SHEET=

SIGNAL NO	NAME	DATE ESTAB	LATATUDE	LONGITUDE	ELEV	SOURCE	MISC
104	ROUND 1948	1948	58-36-19.~~258~~ 285 MSM	159-58-33.257	~~306.5~~ 429.8	~~Field~~ G15848	
105	BOO BOO	1985	58-39-35.~~298~~ 265	160-15-14.~~561~~ 574	124.7	Field	
106	RIGHT HAND 1948	1948	58-46-12.764	159-54-28.445	74.8	G15848	
107	FOG	1986	58-~~44~~ 42 29.885	~~159-58-33.257~~ 160-16-23.668	38.1	Field	
200	CROOKED 1948	1948	58-42-10.704	160-17-18.642	306.5	G15848	
202	CROOKED 1948 ~~AZIMUTH MARK~~ AZ MK	1948	58-38-21.908	160-16-08.412	72.0	G15848	

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
NOAA Ship RAINIER
1801 Fairview Ave E.
Seattle Wa. 98102

July 7, 1986

TO: N/CG222 - Norman E. Banks
Chief, Chart Information Section

THRU: N/MOP - Robert L. Sandquist

FROM: S221 - Carl W. Fisher
Commanding Officer, NOAA Ship RAINIER

SUBJECT: Danger to Navigation Report, OPR-R184-RA-86, Bristol Bay

The NOAA Ship RAINIER has discovered an uncharted 2.0 fm shoal while conducting survey operations on OPR-R184-RA-86, the hydrographic survey of Bristol Bay. The shoal bears 154° T and 6.5 nm from the southernmost islet of the Twins as shown on the attached chartlet. It's location is 1.5 nm north of the center of a charted shoal area represented as a blue circle on chart 16315, 1:100,000. The geographic position of the uncharted shoal's least depth is:

58/29/39.0 N
160/13/21.0 W

Charts affected by this danger are:

Chart No.	Scale	Edition
16315	1:100,000	2nd Ed., Jan 4/86
16011	1:1,023,188	31st Ed., June 29/85
16006	1:1,534,076	28th Ed., Mar 31/84

A radio-teletype message and a hard copy memo concerning this danger have been sent to the Coast Guard for publication in the Local Notice to Mariners. Copies are attached to this report.

The uncharted shoal was discovered when running launch reconnaissance lines which were designed to create a buffer zone for the ship to safely turn in while running ship's hydrography on Sheet X (H-10216) and does not lie within the limits of the sheet. Once discovered, the shoal was developed by splitting basic north-south line spacing to 100 m. The area was further crossed by east-west lines spaced at 200 m. Position control used for the survey was range-range, Mini-Ranger. Depths were acquired with a DSF-6000N survey echo sounder.

Data were plotted on a 1:10,000-scale field sheet which is forwarded with this report. Predicted tide correctors have been applied to the plotted soundings. It should be noted that the east-west lines were run on a different day than the north-south lines and that a .3 to .6 fm discrepancy exists between soundings acquired on the two days. RAINIER believes this discrepancy is attributable to the difference between real and predicted tides.

The bottom in the development area is gently sloping and the uncharted shoal's axis was found to lie in a north-south orientation. Depths within a half-mile to the north and east gradually deepen to 5 fm, while depths to the south (through the charted blue shoal area) remain 2 to 5 fm. The least depth discovered over the charted blue shoal area was 3.0 fm fm at the following geographic position:

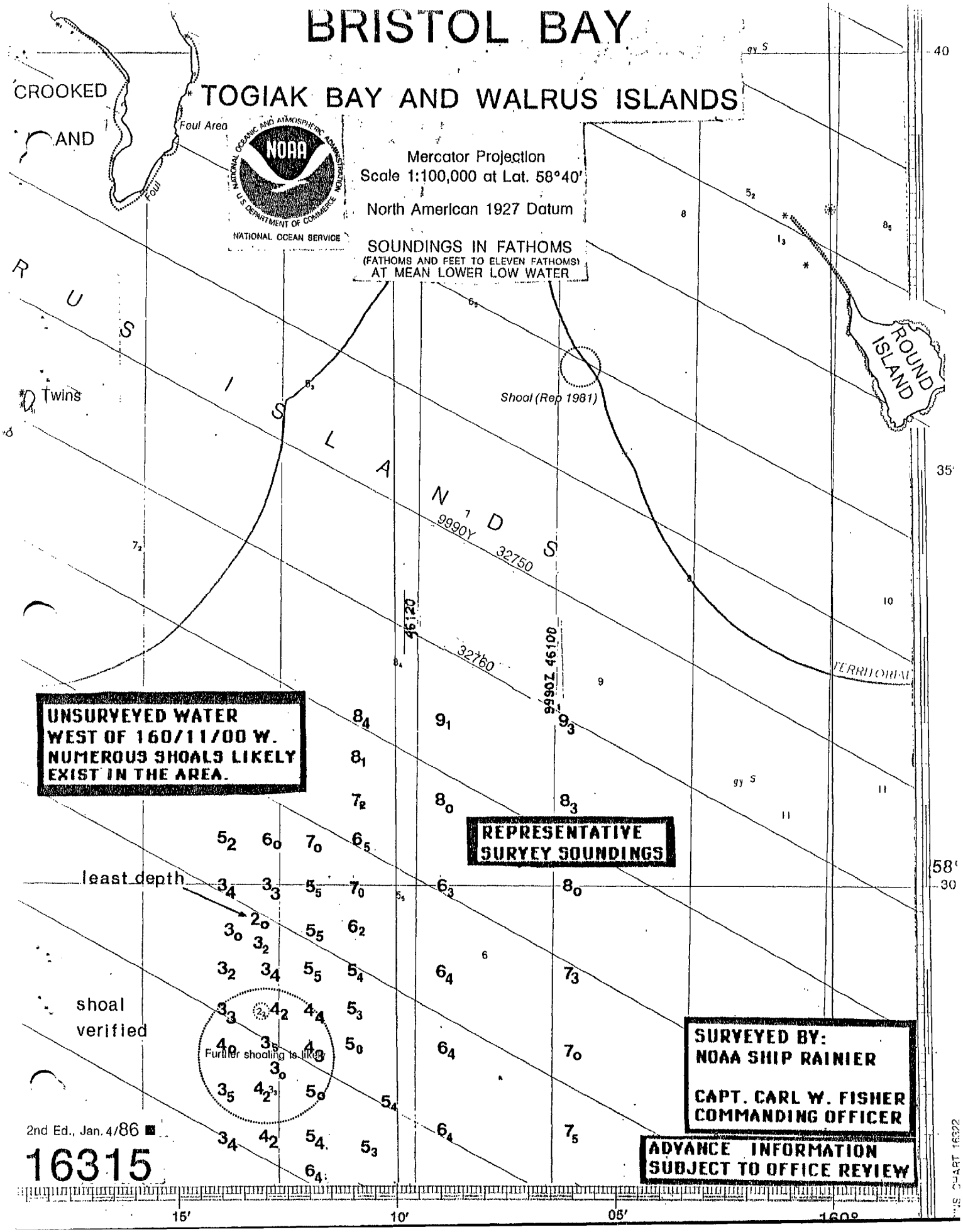
58/27/46.0 N
160/12/41.9 W

Soundings over the charted blue shoal area were run at 200 m north-south spacing, with several 100 m splits run near the charted center but requires further development. The charted 2 fm 2 ft least depth should be retained until the scheduled assignment of this AWOIS item. This charted shoal is AWOIS Item 50904 and is located on Sheet V.

The extent of the entire feature was not fully defined at this time due to the survey priorities set forth in the project instructions. RAINIER believes that the note in the blue shoal circle on chart 16315 stating "further shoaling is likely" is a valid warning to mariners and recommends its continued use in addition to indicating the 2.0 fm depth of the uncharted shoal located 1.5 nm to the north of the center of the circle.

RAINIER requests that survey priorities be reviewed with respect to this information and that the ship be informed as soon as possible if any further development of the feature is required.

Attachments


BRISTOL BAY
TOGIAK BAY AND WALRUS ISLANDS
CROOKED
AND
Foul Area
Foul
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEAN SERVICE
Mercator Projection
Scale 1:100,000 at Lat. 58°40'
North American 1927 Datum
SOUNDINGS IN FATHOMS
(FATHOMS AND FEET TO ELEVEN FATHOMS)
AT MEAN LOWER LOW WATER
R U S I S L A N D S
Twins
Shoal (Rep 1981)
ROUND ISLAND
TERRITORIAL
9990Y 32750
46120
32760
9990Z 46100
UNSURVEYED WATER
WEST OF 160/11/00 W.
NUMEROUS SHOALS LIKELY
EXIST IN THE AREA.
REPRESENTATIVE
SURVEY SOUNDINGS
least depth
shoal
verified
Further shoaling is likely
SURVEYED BY:
NOAA SHIP RAINIER
CAPT. CARL W. FISHER
COMMANDING OFFICER
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW
2nd Ed., Jan. 4/86
16315
40
35'
30
58°
15'
10'
05'
160°
U.S. CHART 16322

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RAINIER S-221
1801 Fairview Ave. East
Seattle, WA 98102-3767

6 July, 1986

Director
DMAHTC
6500 Brooks Lane
Washington, D.C. 20315-0030

RE: Notice to Mariners

REF: Radio Message 072300Z

Dear Sir:

It is requested that the following be published in the Local Notice to Mariners for the Seventeenth District:

The NOAA Ship RAINIER of the National Ocean Service, has discovered an uncharted 2.0 fathom shoal while conducting hydrographic survey operations in Bristol Bay, Ak. This uncharted shoal bears 154°T and 6.5 nautical miles from the southernmost islet of the Twins as shown on the attached chartlet. It's location is 1.5 nautical miles north of the center of a charted shoal area represented by a blue circle on chart 16315, 1:100,000. The geographic position of the shoal's least depth is 58/29/39.0 N 160/13/21.0 W. Currently there are no charted depths in the immediate area of this shoal. The shoal has a gentle slope and representative depths are shown on the attached chartlet. The existence of the charted shoal located at 58/28/00.0 N 160/12/30.0 W, and depicted as a blue area, has been verified. The immediate area west of 160/11/00.0 W has not been thoroughly surveyed and numerous shoals are likely to exist in that region.

Charts affected by this danger are:

16315	2nd Ed., Jan 4/86	1:100,000
16011	31st Ed., Jun 29/85	1:1,023,188
16006	28th Ed., Mar 31/84	1:1,534,076

Sincerely,

Carl W. Fisher

Carl W. Fisher
Captain, NOAA
Commanding Officer

Attachment

RTTUZYUW RUHPTEF0077-UUUU---RUHPSUU.
ZNR UUUUU
R 072300Z JUL 86
FM NOAAS RAINIER
TO CCGDSEVENTEEN JUNEAU AK
INFO NOAAMOP SEATTLE WA
DMAHTC WASHINGTON DC//NVS//
ACCT CM-VCAA
BT
UNCLAS
IT IS REQUESTED THAT THE FOLLOWING BE PUBLISHED IN THE LOCAL NOTICE TO MARINERS FOR THE SEVENTEENTH DISTRICT:
THE NOAA SHIP RAINIER OF THE NATIONAL OCEAN SERVICE, HAS DISCOVERED AN UNCHARTED 2.0 FATHOM SHOAL WHILE CONDUCTING HYDROGRAPHIC SURVEY OPERATIONS IN BRISTOL BAY, AK. THIS UNCHARTED SHOAL BEARS 154 DEGREES TRUE AND 6.5 NAUTICAL MILES FROM THE SOUTHERNMOST ISLET OF THE TWINS AS SHOWN ON THE ATTACHED CHARTLET. IT'S LOCATION IS 1.5 NAUTICAL MILES NORTH OF THE CENTER OF A CHARTED SHOAL AREA REPRESENTED BY A BLUE CIRCLE ON CHART 16315, 1:100,000. THE GEOGRAPHIC POSITION OF THE SHOAL'S LEAST DEPTH IS 58/29/39.0 N 160/13/21.0 W. CURRENTLY THERE ARE NO CHARTED DEPTHS IN THE IMMEDIATE AREA OF THIS SHOAL. THE SHOAL HAS A GENTLE SLOPE AND REPRESENTATIVE DEPTHS ARE SHOWN ON THE ATTACHED CHARTLET. THE EXIXTENCE OF THE CHARTED SHOAL LOCATED AT 58/28/00.0 N. 160/12/30.0 W, AND DEPICTED AS A BLUE AREA, HAS BEEN VERIFIED. THE IMMEDIATE AREA WEST OF 160/11/00.0 W HAS NOT BEEN THOROUGHLY SURVEYED AND NUMEROUS SHOALS ARE LIKELY TO EXIST IN THAT REGION.
CHARTS AFFECTED BY THIS DANGER ARE:

16315	2ND ED.,	JAN 4/86	1:100,000
16011	31ST ED.,	JUN 29/85	1:1,023,188
16006	28TH ED.,	MAR 31/84	1:1,534,076

A LETTER WITH ATTACHMENT HAS BEEN MAILED TO CONFIRM THIS MESSAGE.
BT
#0077
NNNN

APPROVAL SHEET

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

RA-20-1-86 (H-10216)

Standard procedures were followed in accordance with the Hydrographic Manual, Hydrographic Survey Guidelines, and PMC OPORDERS in producing this survey. The data were examined daily during the acquisition and processing phases of the survey.

The field sheet and accompanying records have been examined by me, and are considered complete and adequate for charting purposes, and are approved.

Carl W. Fisher

Carl W. Fisher
Captain, NOAA
Commanding Officer

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SHEET

SUPERSEDED 6/7/91

DATE: January 2, 1987

Marine Center: Pacific

OPR: R184

Hydrographic Sheet: H-10216

Locality: Seven Miles SSW of Round Island Bristol, Bay, AK

Time Period: June 21 - July 13, 1986

Tide Station Used: 946-5182 Black Rock, AK

Plane of Reference (Mean Lower Low Water): 8.91 ft.

Height of Mean High Water Above Plane of Reference: 9.0 ft.

Remarks: Recommended Zoning

1. North of latitude 58° ~~25.0'~~ 24.5' * apply a -10 minute time correction and x0.97 Range Ratio to all heights.
2. South of latitude 58° ~~25.0'~~ 24.5' apply a -15 minute time correction and x 0.96 Range Ratio to all heights.

* PER PHONE CONV. W/JOE MULLEN ON 1-28-87. JNS

James R. Hubbard
Chief, Tidal Datum Quality
Assurance Section

ORIGINAL

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: June 7, 1991

MARINE CENTER: Pacific

OPR: R-184

HYDROGRAPHIC SHEET: H-10216 **(REVISED)**

LOCALITY: Seven Miles SSW of Round Island, Bristol Bay, Alaska

TIME PERIOD: June 21 to July 13, 1986

TIDE STATIONS USED: 946-5182 Black Rock, Alaska
Lat. 58° 42.5'N Lon. 160° 11.3'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 8.91 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 9.0 ft.

REMARKS: RECOMMENDED ZONING

1. East of longitude 160° 00.0'W, apply a -10 min. time correction and a x0.80 range ratio to Black Rock (946-5182).

2. West of longitude 160° 00.0'N, times are direct and apply a x0.80 range ratio to Black Rock (946-5182).

Note: Times are tabulated in Greenwich Mean Time.

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10216

Name on Survey	A ON CHART NO. 16315	B ON PREVIOUS SURVEY NO. 1601	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (TITLE)										1
BRISTOL BAY	X									2
ROUND ISLAND (title)	X									3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
					Approved:					18
										19
					Charles E. Harrington					20
					Chief Geographer - N/CG2x5					21
					JAN 21 1987					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H) (9-83)

U.S. DEPARTMENT OF COMMERCE

REGISTRY NUMBER H-10216

HYDROGRAPHIC SURVEY STATISTICS

RECORDS ACCOMPANYING SURVEY To be completed when survey is processed

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1 + 1:2	SMOOTH OVERLAYS: POS., ARC, EXCESS	5
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	3

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	1					
ENVELOPES						
VOLUMES	1					
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List)

PHOTOBATHYMETRIC MAPS (List)

NOTES TO THE HYDROGRAPHER (List)

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer s report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			2476
POSITIONS REVISED	—	—	7
SOUNDINGS REVISED	—	—	185
CONTROL STATIONS REVISED	—	—	1
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION	—	—	—
~~VERIFICATION OF CONTROL~~	—	—	—
VERIFICATION OF POSITIONS	41.5	—	41.5
VERIFICATION OF SOUNDINGS	19.5	—	19.5
~~VERIFICATION OF JUNCTIONS~~	—	—	—
~~APPLICATION OF PHOTOBATHYMETRY~~	—	—	—
~~SHORELINE APPLICATION VERIFICATION~~	—	—	—
COMPILATION OF SMOOTH SHEET	15.0	—	15.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS	—	13.5	13.5
~~EVALUATION OF SIDE SCAN SONAR RECORDS~~	—	—	—
~~EVALUATION OF WIRE DRAGS AND SWEEPS~~	—	—	—
~~EVALUATION~~ REPORT		15.0	15.0
~~GEOGRAPHIC NAMES~~	—	—	—
OTHER* DIGITIZING	—	—	9.0
*USE OTHER SIDE OF FORM FOR REMARKS TOTALS	76.0	28.5	113.5

Pre-processing Examination by J. Wilder	*Beginning Date* 6/1/86	*Ending Date* 9/24/86
Verification of Field Data by T. Jones, M. Sanders	*Time (Hours)* 76.0	*Ending Date* 3/12/87
Verification Check by J. Stringham, B. Olmstead	*Time (Hours)* 15.0	*Ending Date* 3/13/87
Evaluation and Analysis by I. Almaden	*Time (Hours)* 28.5	*Ending Date* 3/24/87
Inspected by D. Hill	*Time (Hours)* 2.0	*Ending Date* 3/30/87

U.S. GOVT. PRINTING OFFICE 1983 764-006/6061

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10216

1. INTRODUCTION

H-10216 was accomplished by the NOAA Ship RAINIER in accordance with the following project instructions:

OPR-R184-RA-86, dated April 16, 1986
Change Number 1, dated May 23. 1986

This is a basic hydrographic survey of an offshore area in Bristol Bay, Alaska, located approximately seven nautical miles southwest of Round Island. It is bounded by latitude 58°33'00"N to the north, latitude 58°24'50"N to the south, longitude 159°56'00"W to the east and longitude 160°11'30"W to the west. The area has gently sloping bottom with sand waves in the vicinity of latitude 58°25'45"N and longitude 160°11'00"W. The bottom is composed mainly of sand and mud. Depths range from 4.7 to 19.9 fathoms.

Tides based on the 1985 data from tide station 946-5182 Black Rock were used during field processing. Tide correctors used for the final reduction of soundings reflect approved hourly heights during the time of survey zoned from the same tide station.

The field sheet parameters have been revised to conform to the size requirements for a smooth sheet and to change the projection to polyconic. The field values for electronic control, velocity and TRA corrections have been checked during office processing and found to be adequate. A correction of 6.6 meters has been applied to the position data to account for the displacement of the RAINIER echosounder transducer away from the positioning system antenna. The revised data is listed in the smooth position and sounding printouts.

A digital file for this survey has been generated and includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain descriptive information; however, may not be included in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are adequately discussed in sections F and G of the hydrographer's report and in the Horizontal and Electronic Control Reports for OPR-R184-RA-86.

Positions of horizontal control stations used during hydrography are field and NGS published positions based on North American Datum of 1927.

The geographic position of station BOO-BOO used on this survey is based on a 1986 office recomputation.

There is no shoreline within the limits of this survey.

3. HYDROGRAPHY

Hydrography within the limits of the sheet is adequate to:

a. Delineate the bottom configuration, determine least depths, and to draw the standard depth curves.

b. Reveal that there are no significant discrepancies or anomalies requiring further investigation.

c. Show that the survey had been properly controlled and soundings are correctly plotted.

A
The 6-fathom supplemental curve ~~and brown depth curves were~~ was added to the smooth sheet to highlight the shoaling noted in the vicinity of latitude 58°27'00"N, longitude 160°07'00"W.

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No.3, the Hydrographic Survey Guidelines, and the PMC OPORDER, except as noted in the Preprocessing Examination Report, dated September 19,1986.

5. JUNCTIONS

H-10216 junctions with the following surveys:

Survey	Year	Scale	Area
H-10184	1985	1:40,000	South
H-10188	1985	1:20,000	East
H-10219	1986	1:20,000	North

H-10184 and H-10188 had been previously processed and forwarded for charting. Junction comparisons were made using file copies of the surveys. Soundings are found to be in good agreement; however, the depth curves on H-10184 should be adjusted to conform with this survey.

H-10219 is still in processing and junction comparisons were made using a preliminary sounding plot. The junction has been adequately effected.

There are no contemporary or prior surveys to the west of this survey. Comparison to chart 16315 is meaningless due to the lack of charted depths.

6. COMPARISON WITH PRIOR SURVEYS

H-7718 (1948) 1:100,000

H-7718 provides the basic survey coverage of the entire area of this survey. Comparison with this prior survey is satisfactory. No significant discrepancies were found between this sparsely sounded reconnaissance survey

of 1948 and the present survey. H-10216 was accomplished with more accurate positioning and determination of critical depths through closer line spacing which was not accomplished during the 1948 survey.

There are no AWOIS items originating from this prior survey applicable to the present survey.

H-10216 is adequate to supersede the prior survey within their common areas.

7. COMPARISON WITH CHART

Chart 16011, 30th Edition, dated April 2, 1983; scale 1:1,023,000
Chart 16315, 1st Edition, dated March 9, 1985; scale 1:100,000

a. Hydrography - Charted information mostly originates from the prior survey H-7718 discussed in Section 6 of this report, while other charted soundings originate from unknown sources. For a detailed comparison with charted features see section L of the hydrographer's report.

There are no AWOIS items originating from miscellaneous sources applicable to the survey.

H-10216 is adequate to supersede charted hydrography within the common area.

Geographic names appearing on the smooth sheet have been approved by the Chief Geographer and are plotted in accordance with charts 16011 and 16315.

A Danger to Navigation Report concerning an uncharted 2-fathom shoal found close to the western limit of the survey was submitted by the hydrographer to the 17th Coast Guard District in Juneau, Alaska for inclusion to the Local Notice to Mariners. A separate report was sent to the Director, DMAHTC for their information. Field data were transmitted to Chart Information Section, N/CG222 by the hydrographer. These data have not been reviewed by the Nautical Chart Branch, N/MOP21. No additional dangers were identified during office processing.

b. Controlling Depths - There are no charted channels with controlling depths within the limits of this survey.

c. Aids to Navigation - There are no fixed or floating aids within the limits of this survey.

8. COMPLIANCE WITH INSTRUCTIONS

H-10216 adequately complies with the project instructions noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a good basic hydrographic survey. No additional field work is recommended.

Isagani A. Almacen
Cartographer

This survey has been examined and it meets Charting and Geodetic Service standards and requirements for use in nautical charting. The survey is recommended for approval.

Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10216

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

for Chief, Nautical Chart Branch 3-31-87 (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:LWMordock 3/31/87

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Director, Pacific Marine Center 3-31-87 (Date)

ADDENDUM TO EVALUATION REPORT FOR H-10216

The Evaluation Report, Section 2, Control and Shoreline is supplemented as follows:

In accordance with N/CG2 memorandum, dated December 12, 1986, an NAD 83 datum adjustment tick has been added to the smooth sheet and accompanying overlays. The adjustment value was determined by N/CG121 and amounts to -2.786 seconds of latitude and +7.888 seconds of longitude for the geographic area common to this survey (NAD 27 position to NAD 83 position). Computed geographic positions contained in the survey digital file remain on NAD 27.

Thomas W Richards 6/23/87
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:LWMordock Larry W. Mordock 6/23/87

Approved: Robert L. Faught 6-23-87
Director, Pacific Marine Center (Date)

ADDENDUM
H-10216

Survey H-10216 has been revised. This revision consists of a recomputation of depths and heights based on the establishment of a new tidal datum. The revisions are displayed on a film overlay which is intended to supplement hydrographic information previously displayed on the smooth sheet. The latest Tide Note, documenting the new tidal datum, has been attached to the descriptive report. The completed revision plot has been inspected with regard to delineation of depth curves, depiction of critical depths, junctions, cartographic symbolization, comparison with prior surveys and the verification or disproval of charted features. The digital data have been completed and all revisions and processing have been entered into the magnetic tape record for this survey. A final sounding listing has been made and is included with the survey records. The revised data and records comply with NOS requirements for use in nautical charting.

Dennis Hill Date 1-29-92

Dennis J. Hill
Chief, Hydrographic Processing Unit
Pacific Hydrographic Section

I have reviewed the smooth sheet revision overlay and accompanying data. This overlay and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting.

Douglas G. Hennick Date 1/29/92

Commander, Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

****

Final Approval

Approved:

J. Austin Yeager Date 9/28/93

J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

8802 No. 3 (3 sheets)

10188
7718

Mercator Projection Scale 1:1,023,188 at Lat. 56°00'

NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10216

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16315	10-5-87	Kevin Barthel	(Full) ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 3
16011	3-14-89	Russell P Kenney	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 30 Applied through 16315
16315 (Overlay)	9/25/92	Fannie Powers	Full ~~Part Before~~ After Marine Center Approval Signed Via N.C.
			Drawing No. #8
16006 (Overlay)	7/2/93	Kenny O'Dell DCA	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 27 APPLIED THRU C-16011 #31.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

appld to Stds 8-25-87 pm